

Application Serial No. 10/576,006  
Reply to final office action of December 10, 2009

FEB 08 2010 PATENT  
Docket: CU-4773

Remarks and Arguments

Reconsideration is respectfully requested.

Claims 1-4, 6, 7, 9 and 10 are pending before this amendment. By the present amendment, claim 1 is amended. No new matter has been added.

In the office action (page 3), claims 1-4, 6-7 and 9-10 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,937,332 (Karabinis) in view of U.S. Publication No. 2002/0118138 (Lindenmeier). The "et al." suffix is omitted from the Lindenmeier reference name.

The applicants have amended claim 1 to clarify the presently claimed invention and to traverse the examiner's rejection.

The present invention relates to a mobile station for being able to receive a same downlink satellite signal before entering and after leaving a shadow area, where the downlink satellite signal cannot be directly transmitted to the mobile station when the mobile station is traveling through the shadow area. Further, the present invention discloses that the satellite signal the mobile station was receiving prior to entering the shadow station is the same satellite signal being amplified by a receiving unit (i.e., downlink signal from the same satellite). This amplified downlink signal from the satellite is transmitted through an electrically connected feeding line (wherein the amplified downlink signal through the feeding line cannot be blocked) to the radiating unit for being radiated to the mobile station as it travels in through the shadow area, wherein the radiating unit transmits with **only dual asymmetrically formed dual transmitting antennas**. Claim one have been amended to clarify these aspects of the present invention, where claim 1 now recites, *inter alia*:

Application Serial No. 10/576,006  
Reply to final office action of December 10, 2009

PATENT  
Docket: CU-4773

--a divider for dividing the amplified downlink signal to a first portion and a second portion, and passing the first portion to the first microstrip patch array antenna and the second portion to the second microstrip patch array antenna,

where the dual microstrip patch array antenna is used only as a transmitting antenna,

wherein the dual microstrip patch array antenna is formed asymmetrically to the divider for only radiating the downlink signal in the shadow area for maximizing the downlink signal received by the mobile station in the shadow area, and

wherein the radiating downlink signal received by the mobile station is adjustable from any changes to the shadow area and a direction the mobile station travels--.

Support for these limitations can be found at least in the specification at page 9, line 3 to page 10, line 2 and FIG. 9).

Thus, amended claim 1 requires an asymmetrically formed first portion and second portion to equally receive the downlink signal, which then **only** radiates this **divided** signal at various angles depending the changing shadow area and direction of the mobile station in the shadow area.

The applicants respectfully submit that Karabinis and/or Lindenmeier, either alone or in combination, fails to disclose or suggest this element of amended claim 1 of the presently claimed invention.

The examiner concedes that Karabinis fails to disclose the dual microstrip patch array antenna is used only as a transmitting antenna. To cure this deficiency, the examiner looks to Lindenmeier for allegedly disclosing both antennas in FIGs. 3a-4d are at certain angle positions (**only one angle position**) and symmetrical, hence a completely **100%** symmetrical dual transmitting antenna.

However, nowhere does Lindenmeier discloses or suggests receiving equally divided signal to an **asymmetrical formed antennas**, which can then transmit this

Application Serial No. 10/576,006  
Reply to final office action of December 10, 2009

PATENT  
Docket: CU-4773

equally received signal to various directions. That is, FIGs. 3a – 4d must **only** show symmetrical antennas for the Lindenmeier invention to work as disclosed/claimed (Lindenmeier Abstract and [0047]-[0052]). That is, Lindenmeier requires the symmetry to overcome the disadvantages of the prior art satellite communications antennas, where Lindenmeier invention enhances the radiation in the region of low elevation angles by comparison with the radiation in the zenith angle region from the formation of the symmetrical ring structure (2) with respect to a vertical symmetry line above the conductive base surface 1, as shown in FIGs 3a-4d of Lindenmeier.

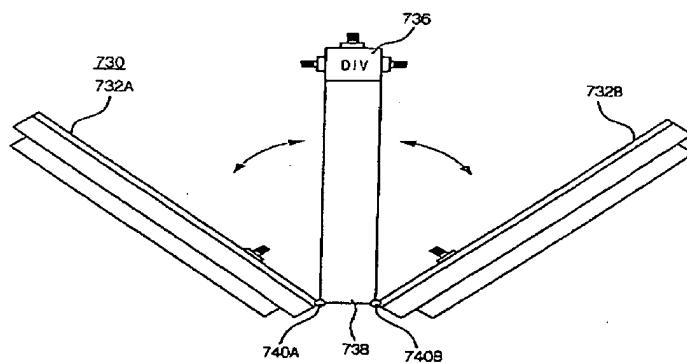
Accordingly, nowhere do the examiner's cited references discloses or suggest the limitation of amended claim 1 for disclosing an apparatus for repeating a downlink signal from a satellite to a mobile station in a shadow are having a receiving unit for receiving the downlink signal and amplifying the received downlink signal from the satellite; a radiating unit for radiating the amplified downlink signal to the shadow area; and a feeding unit for feeding the amplified downlink signal to the radiating unit. More specifically, nowhere do the examiner's cited references discloses or suggest the limitation of amended claim 1 for disclosing the radiating unit having a symmetrical dual transmitting antenna provided with a first microstrip patch array antenna and a second microstrip patch array antenna; and a divider for dividing the amplified downlink signal to a first portion and a second portion, and passing the first portion to the first microstrip patch array antenna and the second portion to the second microstrip patch array antenna such that this dual microstrip patch array antenna is used only as a transmitting antenna and which is formed **asymmetrically to the divider** for **only** radiating the downlink signal in the shadow area for **maximizing** the downlink signal received by the

Application Serial No. 10/576,006  
 Reply to final office action of December 10, 2009

PATENT  
 Docket: CU-4773

mobile station in the shadow area. Also, this radiating downlink signal received by the mobile station can be **adjusted** for any changes to the shadow area and for a direction the mobile station travels.

In contradistinction, FIG. 9, as shown below, of the present invention discloses dual directional microstrip patch array antenna 730 is used **only** as a transmitting antenna, wherein these dual portions 732A and 732B are formed **asymmetrically** to the divider for receiving and **only** transmitting a **divided downlink signal from the divider at various transmitting angles.**



As shown above in Fig. 9, the dual directional microstrip patch array antenna 730 includes a first microstrip patch array antenna 732A, a second microstrip patch array antenna 732B, a divider 736 and a supporting member 738 provided with a pair of hinges 740A, 740B, wherein the hinges allow antenna 732A and 732B to be formed **asymmetrically** to the divider. A downlink received signal from the receiving block is divided by the divider 736 to a first downlink signal and a downlink second signal. The first downlink signal is radiated through the first microstrip patch array antenna 732A to a **first direction** and the second downlink signal is radiated through the second microstrip patch array antenna 732B to a **second direction**, which is opposite direction

Application Serial No. 10/576,006  
Reply to final office action of December 10, 2009

PATENT  
Docket: CU-4773

of the first direction and **asymmetrically** to the divider. The first and the second microstrip patch array antennas 732A, 732B are **rotatably** connected to the supporting member 738. Both the first and the second microstrip patch array antennas 732A, 734B are **only transmitting antennas** and a radiating angles of the first and the second microstrip patch array antennas 732A, 732B are **adjusted** by tilting the first and the second microstrip patch array antennas 732A, 734B around the hinges 740A, 740B, respectively. Thus, the present invention is completely different from Lindenmeier. Also, as stated by the examiner, Karabinis fails to cure this deficiency of Lindenmeier.

Accordingly, the applicants respectfully submit that for these above reasons Lindenmeier and/or Karabinis fails to disclose or even suggest amended 1 of the presently claimed invention, because Karabinis can **not** adjust radiating angles of the first and the second microstrip patch array antennas **by tilting two of transmitting antennas, which receives the divided downlink signal that has been divided and amplified, respectively**. Thus, the applicants respectfully submit that claim 1 is in condition for allowance over the examiner's cited references and especially Lindenmeier.

As to claims 2-4, 6-7, and 9-10, the applicants respectfully submit that these claims are allowable at least since they depend from claim 1, which is now considered to be in condition for allowance for the reasons above.

For the reasons set forth above, the applicants respectfully submit that claims 1-4, 6-7 and 9-10, now pending in this application, are in condition for allowance over the cited references. Accordingly, the applicants respectfully request reconsideration and withdrawal of the outstanding rejections and earnestly solicit an indication of allowable subject matter. This amendment is considered to be responsive to all points raised in

Application Serial No. 10/576,006  
Reply to final office action of December 10, 2009

PATENT  
Docket: CU-4773

the office action. Should the examiner have any remaining questions or concerns, the examiner is encouraged to contact the undersigned attorney by telephone to expeditiously resolve such concerns.

When issuance of a Notice of Allowance is proper in the next action, the examiner is authorized to cancel the withdrawn claims, for which the applicant reserves the right to file a divisional application. Should the examiner have any remaining questions or concerns, the examiner is encouraged to contact the undersigned attorney by telephone to expeditiously resolve such concerns.

Respectfully submitted,

Dated: February 8, 2010

Keith S. Van Duyne  
Keith S. Van Duyne, Reg. No. 54,505  
Ladas & Parry  
224 South Michigan Avenue  
Chicago, Illinois 60604  
(312) 427-1300